

## Prenatal Care



Clerkship Week 1 Seminar  
Department of Obstetrics and  
Gynecology  
University of Western Ontario

## First Prenatal Visit

- Dating the pregnancy
  - Last menstrual period – Regular? Certain?
  - Naegele's rule – add 1 week, subtract 3 months
  - Avg length of gestation ~ 280 days
  - Confirm with ultrasound

## Determination of gestational age



## Determination of gestational age

- CRL up to ~14 weeks:  $\pm$  5-7 days
- >16 weeks
  - Biparietal diameter (BPD)
  - Head circumference (HC)
  - Abdominal circumference (AC)
  - Femur length (FL)
- Measurements >16 weeks:  $\pm$  10 days weeks

## The Dating Game...

### Scenario 1

- 24 yo woman, 1<sup>st</sup> pregnancy, LMP = Dec 1<sup>st</sup>, regular cycles q 28 days, Usd Feb 20<sup>th</sup>, CRL = 12 weeks 2 days.

Her due date is

- a) Sept 7<sup>th</sup>
- b) Aug 24<sup>th</sup>
- c) Sept 2<sup>nd</sup>
- d) When ever the baby decides to come

## The Dating Game...

### Scenario 2

- 24 yo woman, 1<sup>st</sup> pregnancy, LMP = Dec 1<sup>st</sup>, forgot 2 Alesse tablets, Usd April 5<sup>th</sup>, biometry 20 weeks

Her due date is

- a) Sept 7<sup>th</sup>
- b) Aug 24<sup>th</sup>
- c) Sept 2<sup>nd</sup>
- d) When ever the baby decides to come

## The Dating Game...

Scenario 3

- 24 yo woman, 1<sup>st</sup> pregnancy, LMP = Dec 1<sup>st</sup>, regular cycles every 35 days, no Usd yet.

Her due date is

- Sept 7<sup>th</sup>
- Sept 14<sup>th</sup>
- Sept 2<sup>nd</sup>
- When ever the baby decides to come

## Antenatal Visits

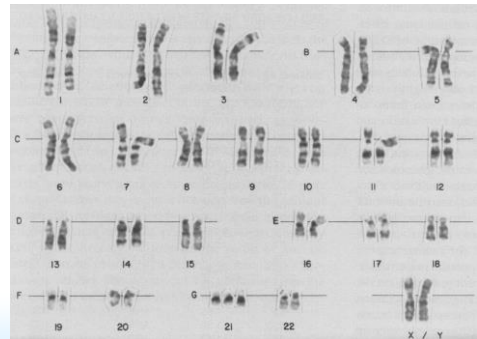
- Frequency
  - Initial assessment < 12 wks
  - Q 4-6 wks to 28 wks / Q2 wks to 36 wks / weekly to delivery

## First and Second Trimester

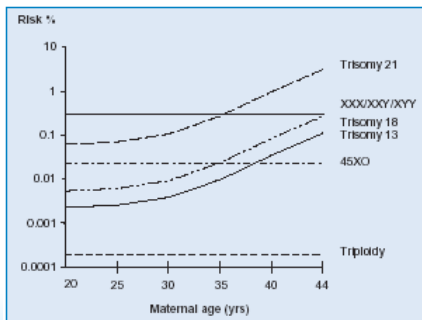
Special considerations:

- Prenatal screening for aneuploidy and NTD (FTS, IPS, MSS)
- Prenatal investigations
- Fetal Ultrasound

## Down syndrome



## Risk for chromosomal abnormalities



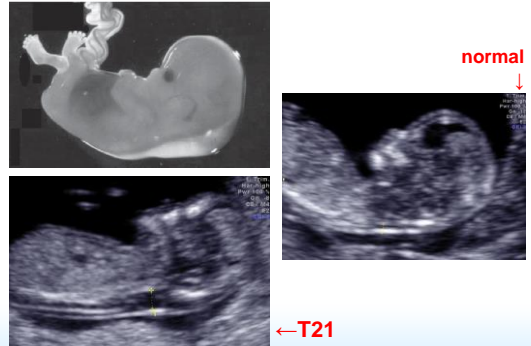
## Risk for chromosomal abnormalities

Maternal age (yrs)	Trisomy 21 Gestation (wks)				Trisomy 18 Gestation (wks)				Trisomy 13 Gestation (wks)			
	12	16	20	40	12	16	20	40	12	16	20	40
20	1048	1200	1295	1527	2484	3590	4897	18013	7826	11042	14654	42423
25	946	1062	1147	1352	2200	3179	4336	15951	6930	9778	12978	37567
30	626	703	759	895	1456	2103	2869	10554	4585	6470	8587	24856
31	543	610	658	776	1263	1825	2490	9160	3980	5615	7453	21573
32	461	518	559	659	1072	1549	2114	7775	3378	4766	6326	18311
33	383	430	464	547	891	1287	1755	6458	2806	3959	5254	15209
34	312	350	378	446	725	1047	1429	5256	2284	3222	4277	12380
35	249	280	302	356	580	837	1142	4202	1826	2576	3419	9876
36	196	220	238	280	456	659	899	3307	1437	2027	2691	7788
37	152	171	185	218	354	512	698	2569	1116	1575	2090	6050
38	117	131	142	167	272	393	537	1974	858	1210	1606	4650
39	89	100	108	128	208	300	409	1505	654	922	1224	3544
40	68	76	82	97	157	227	310	1139	495	698	927	2683
41	51	57	62	73	118	171	233	858	373	526	698	2020
42	38	43	46	55	89	128	175	644	280	395	524	1516

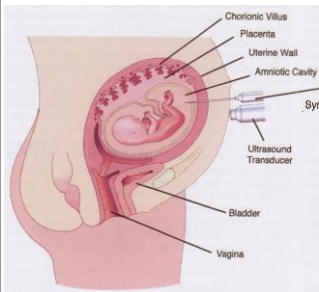
## Integrated screening - summary

- Offered to all pregnant women
  - Screening test, **NOT** a diagnostic test
  - Integrated screening
    - Maternal serum PAPP-A and  $\beta$ HCG at 11-14 weeks
    - Nuchal translucency at 11-14 weeks
    - uEstradiol,  $\alpha$ FP and  $\beta$ HCG at 15-16 weeks
- Detection of ~90-95% of T21  
Offer amniocentesis when risk > 1:200

## Nuchal translucency

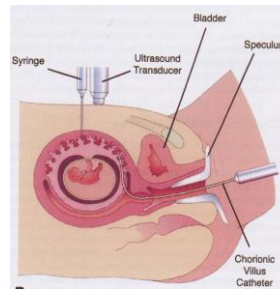


## Amniocentesis



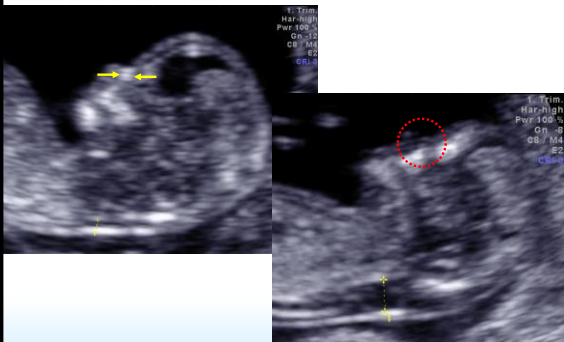
- Genetic Counseling
- GA 16 weeks
- Ultrasonic visualization
- 20 cc amniotic fluid
- Culture fetal fibroblasts
- Result 2-3 weeks
- 0.5% risk pregnancy loss (1:200)

## Chorion villus biopsy



- Genetic Counseling
- 10-12 weeks
- Transabdominal or transcervical
- Karyotype result in 2-3 weeks
- 0.8% risk pregnancy loss (1:100 – 1:150)

## Nasal bone



## First and Second Trimester

### Special considerations:

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- Prenatal investigations
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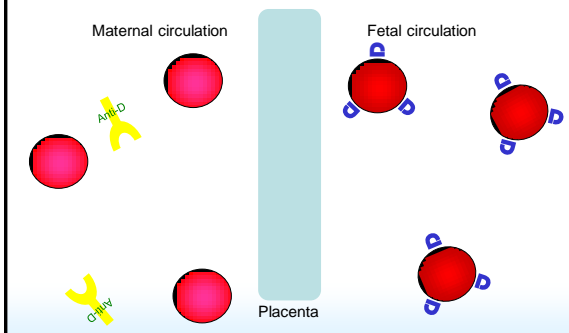
## 'Routine' tests in pregnancy I. First diagnosis of pregnancy

- Hgb
- Blood group and antibody screen
- Urine dip for protein, infection
- VDRL
- Rubella titre
- HBsAg
- STD screen if indicated
- Discuss and offer HIV testing
- Ultrasound

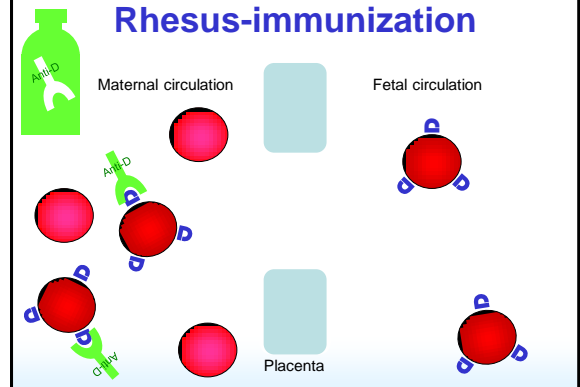
## Rhesus-immunization

- Rhesus negative pregnant women
- Sensitization either through previous pregnancy or transfusion
- IgG crosses placenta, coated erythrocytes destroyed in fetal RES
- Fetal anemia → hydrops

## Rhesus-immunization



## Rhesus-immunization



## Prevention of HIV transmission

- Transmission of HIV dependent on viral load at delivery:
  - 10% at 1000 copies/mL
  - 17% at 1000-10,000 copies/mL
  - 33% at >10,000 copies/mL
  - 0.6-2% with HAART
- Monitoring: Viral load & CD4 count
- Management:
  - HAART if >1000 copies/mL
  - Caesarean section if >1000 copies/mL
  - Intrapartum zidovudine

## First and Second Trimester

### Special considerations:

- Prenatal screening for aneuploidy and NTD (FTS, IPS, MSS)
- Prenatal investigations
- Fetal Ultrasound

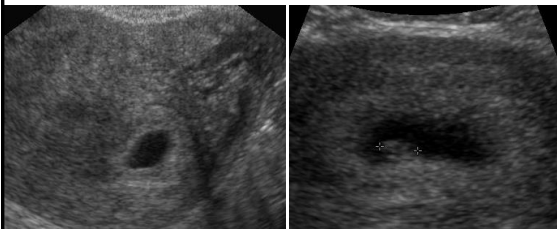
### Ultrasound in obstetrics 1<sup>st</sup> trimester (0-12 weeks)

- Diagnosis of pregnancy
- Assessment of viability
- Gestational age
- Ectopic pregnancy
- Risk assessment for chromosomal abnormalities
- Multiple pregnancy - chorionicity

### Ultrasound in obstetrics 2<sup>nd</sup> trimester (18-20 weeks)

- Gestational age
- Structural defects
- Placental localization
- Assessment of the cervix
- Amniotic fluid volume

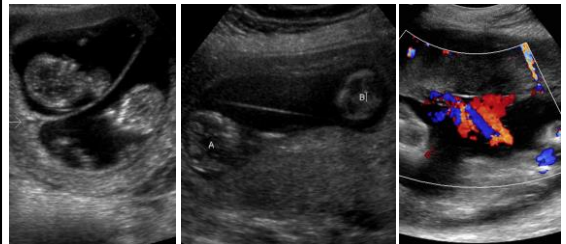
### Diagnosis of pregnancy



Gestational sac  
4-5 weeks

Fetal heart rate  
6 weeks

### Chorionicity in multiple pregnancies

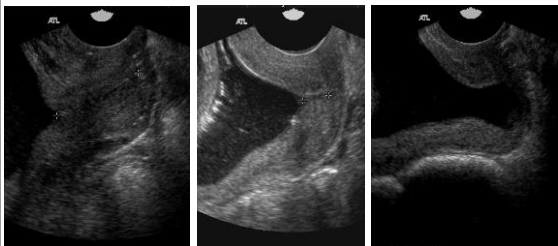


Lambda-sign (Λ)  
Dichorionic

Thin membrane  
Monochorionic

No membrane  
Monoamniotic

### Assessment of cervix



### Placental localization



## Diagnosis of fetal anomalies

- Assessment of fetal growth, placenta, umbilical cord and amniotic fluid
- Detailed survey of skeletal structures, brain, face, thorax, heart, diaphragm, abdomen, urogenital system, etc
- Best at 18-20 weeks:
  - Before 18 weeks: some structures not fully developed
  - After 24 weeks: legal termination issues and increased ossification

## Third Trimester

Objectives:

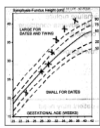
- Determine gestational age
- Assess maternal health/ wellbeing
- Assess fetal health/wellbeing
  - Specific history questions
  - Maternal weight, BP, urine dip
  - SFH (in cm) should equal GA after 20 wks
  - Plot growth on curve on A/N II
  - Leopold's maneuvers to determine lie

36 yo woman, first pregnancy, BMI 41. Fasting blood glucose 6.0 at 28 weeks

32 yo woman, first pregnancy, pre pregnancy weight 110 lbs, weight gain 25 lbs

18 yo woman, first pregnancy, smoker, poor nutrition

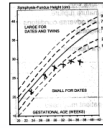
Match the history to the plot of SF heights



A



B



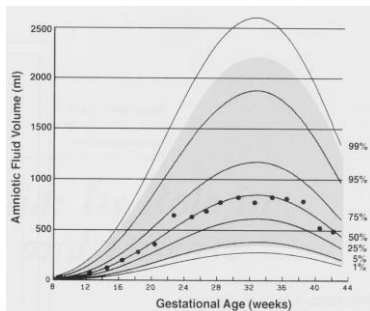
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## Ultrasound in obstetrics 3<sup>rd</sup> trimester (25-40 weeks)

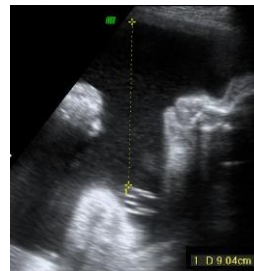
- Fetal well-being
- Fetal growth

## Amniotic fluid volume

- 12 weeks: 35ml
- 18 weeks: 250ml
- 36 weeks: 1000ml
- 40 weeks: 750ml



## Ultrasound and amniotic fluid estimation



Largest vertical pocket >8 cm  
Polyhydramnios



Largest vertical pocket <2 cm  
Oligo- or anhydramnios

## Assessment of fetal well-being

Assessment of fetal wellbeing

- Biophysical profile
- Non-stress test (Cardiotocography)

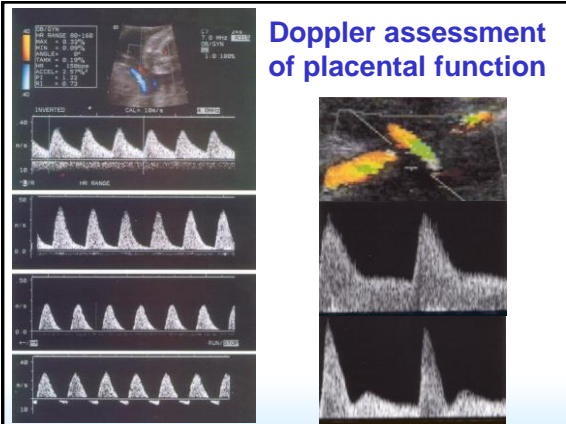
Testing for causative factors: ie placental function

- Doppler ultrasound of umbilical circulation

## Assessment of fetal well-being: BIOPHYSICAL PROFILE

	Normal (2)	Abnormal (0)
Fetal breathing	>30 sec in 30 min	<30 secs in 30 min
Fetal movements	≥3 gross body movements in 30 min	<3 movements in 30 min
Fetal tone	Limb movement from flexion to extension, return to flexion	Fetus in position with limbs extended or no fetal movements
Amniotic fluid	One pocket > 2cm in two perpendicular planes	Largest pocket <2cm
Non-stress test	≥2 accelerations in 40 min	<2 accelerations

## Doppler assessment of placental function



## Third Trimester

Special Considerations

- 26-28 weeks – GDM screening
- 28 weeks – Rh Ig if Rh negative Specific history questions
- 35-37 weeks – Vag/rectal swab for GBS